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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,383	02/02/2001	Min-Jin Ko	YOUME5.001AUS	1430

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EXAMINER

ZIMMER, MARC S

ART UNIT	PAPER NUMBER
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1712

3

DATE MAILED: 03/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/776,383

Applicant(s)

KO ET AL.

Examiner

Marc S. Zimmer

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5 and 6 is/are rejected.
- 7) ☒ Claim(s) 4 and 7-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Applicants disclose a synthetic approach for preparing the cyclic oligomer having an Si-M-Si substructure, one possible embodiment of component (b), without specifying what compound (I) or (II) is to be reacted with. According to page 8 of the Specification, either of these materials is hydrosilylated with a silane compound containing silicon-bound hydrogen. Claim 5 should be amended to include mention of this aspect of the invention.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Pluedemann, U.S. Patent Re. 34,675. Pluedemann discloses a primer composition wherein a conventional silane coupling agent selected from an extended list of functionalized and non-functionalized organotrialkoxysilanes (col. 2, lines 60-68 through column 3, lines 1-17) is mixed with a disilyl crosslinking agent featuring a structure equivalent to that contemplated for component (b) of the claimed invention in an organic solvent medium. Examples of the molecular bridge that may be employed to join the two silane atoms of

the latter reactant include a divalent alkylene radical of 1 to 8 carbon atoms or any of the divalent radicals portrayed in formulas (b) through (e) shown in column 4. Of these, methylene, ethylene, and phenylene radicals are considered most favorable (column 4, lines 62-64).

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al., U.S. Patent # 5,316,855. Wang teaches a coating composition that is used to render a polymer surface onto which it is applied abrasion resistant. The composition, described in column 2 is said to be comprised of a metal alkoxide sol based on silicon or another metal atom and an organosilicon compound having at least one trialkoxysilane group. In particular, they disclose the use of "bis-tri(lower)alkoxysilane-containing" materials that are alkoxysilane-terminated at more than one end such as 1,6 bis-(trimethoxysilyl)hexane. The metal alkoxide sol disclosed by Wang would correspond with component (a) of the instant invention where $m + n = 0$. In examples 4, 5, and 6, they describe the conditions under which the materials are reacted. Typically, the compounds are simply added to a water/alcohol mixture containing HCl as a catalyst and stirred at room temperature for a number of hours.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Uryu, JP 7-333208 A2. Uryu teaches a method for the preparation of spherical silicon-based particles for use as a stationary phase in liquid chromatography columns. The method entails reacting an orthosilicate with a disilyl alkane equivalent to component (b) of the instant invention. The reaction is performed in an alcohol solution in the presence of an

acid catalyst according to the process outlined in page 2 of the computer-translated document.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pluedemann, U.S. Patent Re. 34,675. Pluedemann does not contemplate the utilization of a condensation catalyst. Nonetheless, it is ubiquitously recognized that said catalysts, e.g. acid/alkaline compounds and organotransition metal complexes of tin, titanium, aluminum, etc., may be employed where it is desired to accelerate the condensation reaction. Insofar as the product yielded from these two materials is employed as an adhesive, one of ordinary skill would immediately appreciate that it is often beneficial to hasten the coupling of two interfaces by adding a polymerization catalyst to reduce manufacturing time and, hence, increase the economy of a process.

As for claim 6, Pluedemann advises that the two organosilicon materials may be used in a weight of from 1:99 to 99:1.

Allowable Subject Matter

Claims 4, and 7-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Concerning claim 4, the

strategy for preparing the bridged silanes that recommended by Pleudemann does not at all coincide with the hydrosilylation-based approach presently disclosed. Further, though it is well known that bridged silanes may be synthesized in an analogous manner, the prior art did not indicate what would motivate one of ordinary skill to replace Pleudemann's approach with the one disclosed by the Applicants.

As for claims 8-11, none of the aforementioned references advocated the utilization of the organosilicon condensation products of their respective inventions as a dielectric film for manufacturing miniaturized integrated circuits.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Inoue et al., U.S. Patent Application Publication # US 2001/0051446 discloses a method for preparing an insulating material that mirrors the instant invention in nearly every respect. Indeed, Inoue even contemplates the same use for the film-forming mixture. Nonetheless, the filing date of their application does not antedate that of the instant invention.

Kamiya et al., JP 2001-172573 describes a sol gel formulation comprising TEOS, bis(triethoxysilyl)methane, hydrochloric acid, and ethanol as a solvent. This document is also not available as a reference since the date of publication follows the filing date of the present application.

Burleigh et al., disclose in the *Journal of Physical Chemistry*, Part B (2001), 105, 9935 the synthesis and characterization of what they label a peroidic mesophase

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organosilica that is prepared from bis(triethoxysilyl)ethane and a trialkoxysilane containing an aryl ring substituent. Like *Inoue*, this development was described after the effective filing date of the current Application.

Palladino, U.S. Patent # 5,073,456 discloses a bonding mixture comprised of a disilyl crosslinking agent and a ureidosilane. However, the ureidosilane does not satisfy the limitations of the claimed organosilane (a).

Yuu, JP 11-244676 is of interest for its description of a sol prepared from a disilane resembling component (b) and a metal alkoxide. The product is employed as a separation membrane for gaseous mixtures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 703-605-1176. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Marc S. Zimmer
AU 1712

March 5, 2002



Robert Dawson
Supervisory Patent Examiner
Technology Center 1700